

SYSTEMS AND METHODS FOR SUB-WAVELENGTH IMAGING  
ABSTRACT OF THE DISCLOSURE

Preferred embodiments of the present invention provide methods of forming a  
5 photolithographic pattern by patternwise imaging each of two or more different  
modalities of light onto a multiphoton-specific photoinitiator material to form a  
photolithographic pattern on the surface where each of the patterns of the two or more  
different wavelengths of light overlap. In various embodiments, the invention provides a  
method of semiconductor fabrication capable of permitting the formation of an imaged  
10 feature having a dimension smaller than  $\lambda/(2NA)$ , where  $\lambda$  is the smallest wavelength of  
imaging light, and NA is the numerical aperture of the imaging system.